SUMMARY OF CANADIAN BLACK BEARS WITH DESCRIPTIONS OF TWO NEW NORTHWESTERN SPECIES

By

Rudolph Martin Anderson
Chief, Division of Biology, National Museum of Canada

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Summary of Canadian Black Bears with Description of Two New Northwestern Species*

By

RUDOLPH MARTIN ANDERSON

Chief, Division of Biology, National Museum of Canada

Residents and travellers in northern Canada, and particularly in the Yukon Territory, have occasionally suggested that there are two "kinds" of black bears, big and little, in the region, but the opinion has been difficult to verify in the absence of a sufficient number of specimens. Black bears have virtually the same general appearance, at any age, and the same colour except for a brownish or cinnamon colour phase in a few individuals, and a two-year-old or subadult of one of the larger races looks essentially the same as an adult of one of the smaller races, making it necessary in most cases to have the skull to be certain of the species and age of the animal. In areas where only one race or subspecies of bear is found, as in Canada from Nova Scotia to central Alberta, the skull is not essential for the identification, but in the western and northwestern mountains where the bears are split into local species or races, the hunter who wants his bears determined accurately should save the skull, and if possible, make the usual external measurements, namely, total length (measured in a straight line from tip of nose to end of last bone of the tail), length of tail (bent at right angles to the body and measured to tip of last bone), and hind foot (measured from bend of heel to tip of longest claw). The total gross weight, which of course varies with the condition of the animal, is of much popular and scientific interest, and more data on weights of animals are welcomed when they are verified on standard scales.

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skull smooth and the sutures open or only partially fused. Young adult bears have the skull full size and the sutures closed but well marked, while aged bears will generally have the sutures largely obliterated and the teeth broken, worn, or affected by dental caries.

Students are frequently confused by seldom finding the normal typical number of teeth in the skull of either black, grizzly, or polar bears, the formula being, on each side of the jaws:
Incisors, $\frac{3}{3}$; canines, $\frac{1}{1}$; premolars, $\frac{4}{4}$; molars, $\frac{2}{3}$ — total, 42.

The full complement of teeth is hardly found in one out of one hundred bear skulls, and then only in cubs a few months old, just after the permanent molars are erupted, and before the deciduous teeth are entirely replaced by permanent teeth. The teeth of the milk set are considerably smaller and lighter than the permanent set that replaces them, and are usually replaced during the first summer, but the molars only come in once, two upper and three lower on each side of the mouth. As soon as the crowns of the molars appear above the margins of the alveoli they are seen to be as large as in a fully adult bear.

The fourth or last premolars on each side of both jaws are usually present in bears of any age, and resemble the true molars although of somewhat smaller size, and the last premolar and all the molars are often referred to as "molariform" teeth. The anterior premolars (first, second, and third) are too small to be of much functional use, and appear to be vanishing or disappearing characters, something in the category of the four back molars or "wisdom teeth" in the human skull. These premolars in bears are small, with pointed or rounded tips, usually all present in very young cubs, and it is presumed that many of the permanent premolars are aborted and never erupt, as few of the older cubs have a complete set of permanent premolars. The permanent premolars are loosely rooted and drop out easily, either in life or when the skull is being cleaned. When these teeth drop out before the death of the animal, the alveolar cavity may remain open, but the walls are usually absorbed and the hole filled with bony tissue, leaving only a bony knob or scar, and frequently no recognizable trace of its presence can be found, particularly in the case of the tiny second and third premolars.

cavity remains to some extent, and the relative position and identity of the other teeth may be determined by counting from the rear, beginning with the second (last) upper, 1st upper molar, fourth premolar, etc., the first premolar being the small tooth just behind the canine. In the lower jaw the teeth in order from the rear are third (last) molar, second molar, first molar, fourth premolar, etc. The position, shape, and size of the teeth are very important in verifying the determination of specimens of young bears. The crania are very much alike in the different species in young animals, but the molar teeth are very constant, varying only slightly in individual specimens at any age.

Recent studies of the Canadian black bears, and in particular a series of fifteen specimens obtained by the National Museum of Canada in 1912 from Clement S. Lewis, a trader at the time at Teslin Post, Yukon Territory, who collected material from southwestern Yukon and northern British Columbia, to which were added eight specimens taken by an expedition of the National Museum of Canada along the Canol Road in southeastern Yukon Territory in 1944, have enabled the writer to recognize two distinct new forms of black bear in parts of the territory traversed by the Canol Road in southern Yukon Territory, near the northern part of the Alaska Highway in northern British Columbia, and in the southwestern part of the Mackenzie District, Northwest Territories, and they are here described, followed by a synoptic summary of the notable characteristics of the other species and subspecies of black bears known to occur in Canada.

Euarctos randi, new species. LITTLE YUKON BLACK BEAR.

Type specimen.—Male, adult, skin and skull, No. 17957, Register of Mammals, National Museum of Canada, Ottawa; Sheldon Mountain, Canol Road, mile 222, Yukon Territory, Canada; latitude about 62° 30′ north, longitude 131° west; altitude, about 4000 feet; August 2, 1944; collected by Austin L. Rand; original number, R 494.

Geographic Distribution.—Central and southern Yukon Territory from western slope of Mackenzie Mountains, north and west to Klondike region, Hootalinqua River, Nisutlin River and Teslin Lake; southwest into British Columbia to head of Teslin Lake and Snowden Mountains southwest of Teslin Lake.

Diagnosis.—Colour usually deep black, sometimes dark brownish black with yellowish-tipped hairs, ranging to smoky brown, with area around muzzle ranging from dark brownish to light brown or pale brownish gray, usually not as reddish as in typical *Euarctos americanus*. Skull small and short, rather high in median region, and sloping uniformly fore and aft. Molariform teeth, both upper and lower, very small and light, and tooth-rows shorter than in any other Canadian forms of black bear.

Skull.—Smaller than in any other Canadian black bear. Cranium narrow, with rostrum comparatively long and narrow; parietal ridges well marked and meeting far back, nearly at the parietal-supraoccipital suture, and in most adult specimens with noticeable lyrate ridges external to sagittal crest; sagittal crest rather low and extending forward about to middle of parietals. Palate narrow, rather deeply notched and slightly arched; postpalatal shelf rather long. Postpalatal notch narrow, contracting in width posteriorly, with pterygoid processes slender and flaring and flattened at tips. Mandible short, with ramus straight, posterior projection short and rather broad; coronoid processes rather low, wide at base, with posterior border gently curved, slightly decurved at tip, but terminating some distance anterior to the plane of occipital condyles. A distinguishing feature is the small size of the molariform teeth which in both mandibles are very small and light, and smaller than in any other Canadian form. The last lower molar is the smallest known in any Canadian form.

Measurements.—Type specimen. National Museum of Canada, No. 17597, male adult: Skull: Condylobasal length, 253; basilar length of Hensel, 238; palatal length, 129; postpalatal length, 109; zygomatic breath, 148; width across postorbital processes, 83; length of nasals, 64; alveolar length of upper molariform tooth-row (crown length of 4th upper premolar to end including 2nd upper molar), 51.5; length of last (2nd) upper molar, 24; alveolar length of lower molariform tooth-row (crown length of 4th lower premolar to and including last (3rd) lower molar), 60; length of last (3rd) lower molar, 14. Average of six adult males and four adult females: Condylobasal length, 252 (258-246), 240 (248-234); zygomatic breath, 153.4 (160-148), 148.1 (152-143) length of last (2nd) upper molar, 26 (28-24), 26.1 (28.5-23) alveolar length of lower molariform tooth-row, 63.3 (68-58), 56.9 (56.5-56); length of last (3rd) lower molar, 14.8 (16-12.5), 13.1 (12.4-10).

External characters.—Type specimen, male adult: total length, 1390 mm.; tail vertebrae, 80; hind foot, 236; ear from crown, 120; height at shoulders, 670. No. 17958, male adult, Sheldon Mountain, total length, 1360; tail vertebrae, 110; hind foot, 235; ear from crown, 130; height at shoulders, 720; estimated weight, 200 lbs. No. 17969, Sheldon Lake, male adult, total length, 1490; tail vertebrae, 140; hind foot, 255; ear from crown, 155; height at shoulders, 660; estimated weight, 250 lbs., quite fat. No. 18036, young female adult, Sheldon Lake, total length, 1315; tail vertebrae, 80; hind foot, 205; ear from crown, 104; height at shoulders, 660.

Colour.—The greater number of the specimens examined are glossy black in general colour, with exception of an area of variable width around the muzzle, which is usually rusty browish, but varies from dark brownish to light brownish or pale brownish gray. Tip of nose and claws black. Claws comparatively short and stubby; in type specimen, length of middle front claw 35 mm.; depth, 21; length of middle rear claw, 25, depth, 13.

Remarks.—The theory is widely entertained that two subspecies of the same species do not naturally occupy the same area, although they may overlap by intergradation on the borders of their respective normal ranges. There are some instances where subspecies meet along a fairly well marked line without apparent intergradation, but these can be explained by two or three subspecies extending their range from different directions into unoccupied territory which had been devastated by extensive forest fires within historic times. The large form of black bear described below has been taken at a few points within the known range of the smaller form without showing any signs of intergradation. Further collections in extreme southwestern Yukon Territory and northwestern British Columbia may show intergradation between *Euarctos randi* and *Euarctos americanus emmonsi*, and possibly *E. a. perniger*, but there is no evidence available at the present time, and it seems justifiable to give the new form specific status.

Specimens examined.—Total number, 17 skins, 21 skulls, (all in National Museum of Canada.)

Yukon Territory:

Hootalinqua River, upper end,..... 1
Klondike region,..... 1
Nisutlin River, Canol Road, and upper river..... 3
Pelly River, Canol Road, mile 139,..... 1
Sheldon Lake, Canol Road, mile 222,..... 2
Sheldon Mountain, Canol Road, mile 222,..... 2
Teslin Post, 15 miles northeast,..... 1
Teslin Post, mountains back of,..... 4

Euarctos hunteri, new species.* BIG NORTHWESTERN BLACK BEAR.

Type Specimen.—Sex not determined, but apparently an old male: skull with cape (skin of head and neck); No. 9577, Register of Mammals, National Museum of Canada, Ottawa; near mouth of Prairie Creek, South Nahanni River, Mackenzie district, Northwest Territories, Canada; latitude, about 61° 30′ north, longitude, about 124° 30′ west; collected by Fenley Hunter, summer, August 10, 1928.

Geographic Distribution.—Probably the western portion of the Mackenzie District, Northwest Territories, from Liard River northward to near the limit of trees; westward into central and southern Yukon Territory at least to Teslin Lake.

Diagnosis.—One of the largest of the American black bears, only exceeded in size by the Vancouver Island form (*vancouveri*) and the Queen Charlotte Islands form (*carlottæ*), and probably only equalled by some Rocky Mountain specimens (*cinnamomum*). Colour deep glossy black or black with slight brownish tinge in all specimens examined, although animals in the brownish or cin-

* Named in honour of Fenley Hunter, of Flushing, Long Island, New York, well known as a hunter and historical explorer in Dease River region in northern British Columbia, Frances River region in southeastern Yukon Territory, and the Nahanni mountains in southwestern Mackenzie district of the Northwest Territories; author of "Frances Lake Yukon," 1924, an interesting and well illustrated narrative of his 1923 expedition, and donor of the type specimen of *Euarctos hunteri* to the National Museum of Canada.

of brownish gray around muzzle. Skull averages somewhat larger than the Eastern black bear, with lower crown, sloping more gently to front and rear. The greater length of both upper and lower molariform tooth rows, the large size of these teeth, and particularly the large size of last (third) lower molar, are distinguishing characters.

Skull.—Compared with the forms nearest to its range, the large size of skull and the greater external measurements serve to distinguish *hunteri* from *randi* which occurs on part of the same range. Compared with the two forms which are nearest on the southeast and south: (1) Compared with *E. a. americanus*, the skull is slightly longer; braincase considerably broader; rostrum broader; zygomatic arch broader, with arms more curved upward and wider and flatter vertically; postpalatal shelf narrower; mastoid breadth considerably greater, and mastoid processes extending outward at greater angle with skull; molariform tooth-rows longer in both upper and lower jaws; and in the large size of the third (last) lower molar. (2) Compared with *E. a. cinnamomum*, the skull is approximately the same length in specimens of similar age and sex; braincase broader, less constricted anteriorly; rostrum similar; zygomatic arch with about the same spread; mastoid processes longer, set at about the same angle to skull; pterygoid plates more incurved posteriorly and projecting back father to middle portion of mastoid; suboccipital groove narrower; ramus of mandible with posterior process wider and heavier; coronoid process broader at base and more erect, with posterior border nearly vertical and very slightly decurved at tip.

Measurements.—Type specimen, National Museum of Canada, No. 9577, male (?) adult: Skull: Condylobasal length, 269; basilar length of Hensel, 256; palatal length, 136; postpalatal length, 119; zygomatic breath, 182; width across postorbital processes, 96; length of nasals, 68; alveolar length of upper molariform tooth-row (crown length of 4th upper premolar to and including 2nd (last) upper molar), 59; length of 2nd (last) upper molar, 29; alveolar length of lower molariform tooth-row, 64; length of third (last) lower molar, 15. Average of two adult males (one from Nisutlin River, No. 17952, and one from mountains back of Teslin

basilar length of Hensel, 249-260; palatal length, 138, 138; post-palatal length, 111, 123; zygomatic breath, 180.5-186; width across postorbital processes, 100, 99; length of nasals, 70-72.5; alveolar length of upper molariform tooth-row, 55-57.5; length of 3rd (last) upper molar, 27, 29; alveolar length of upper molariform tooth-row, 62-68.5; length of third (last) lower molar, 16, 17

External characters.—No. 17593, male adult, National Museum of Canada, Nisutlin River, Canol Road, 24 miles from Johnson Crossing, Y.T., July 26, 1944. Collected by A. L. Rand. Coat dark brownish black or black with slight brown tinge, face pale dull brown. Total length, 1390 mm.; tail vertebrae, 80; hind foot, 235; ear from crown, 110; height at shoulders, 810. Length of middle front claw, 39 mm.; depth, 21; length of middle rear claw, 34; depth, 16. Claws dull blackish. No external measurements of other specimens, but adult male from Teslin Lake has jet black coat, with muzzle pale dull brownish; length of middle front claw, 38 mm.; depth 21; length of middle rear claw, 27; depth 18; claws dark brown, dull horn-coloured at tips.

Remarks.—According to E. A. Preble, (1908, Biological Investigation of the Athabaska-Mackenzie region, North Amer. Fauna, No. 27, 221) the cinnamon or brown phase of colour is of rather common occurrence in the mountains of Alberta, but is rare throughout the greater part of the range east of the mountains. He was told by the fur traders that occasional brown specimens are brought to Resolution from eastern end of Great Slave Lake, and at Simpson a brown skin is occasionally traded, but reported to be very rare at Good Hope. Ross (1862, Can. Nat. and Geol.; Vol. 8, 139) stated that the brown variety is very rare in the Mackenzie district.

The skulls of *hunteri* approach one of the smallest of the grizzly bears (*Ursus pallasi* Merriam) in length and breadth, but the skull of *pallasi* is flattened on top, with zygomatic arches comparatively shorter and more outward bowed, and in general more massive. All the teeth are larger and heavier and the molariform tooth-rows much longer in *pallasi* and the larger grizzlies than in any of the bears of the *Euarctos* group. The grizzlies, moreover, have much longer, curved front claws, longer hair, and

race. Some large examples of the "cinnamon" colour phase, fairly common in the Yukon, may easily be mistaken for a grizzly bear, although the grizzly usually has a shaggy hump on the shoulders, and on close examination may be known by the much longer and heavier claws, and larger teeth, particularly in the molar teeth.

Specimen examined.—4, (all in National Museum of Canada).

Northwest Territories:

Mackenzie District, South Nahanni River,

Yukon Territory:

Nisutlin River, Canol Road, 24 miles from Johnson Crossing.
Pelly River, Canol Road, mile 138, near junction with Ross River, 1 (right mandible only).
Teslin Lake, mountains back of, 1.

SUMMARY

For aid in diagnosis a summary is given of the known forms of black bear found in Canada, showing the chief differences from their nearest neighbours. The summary is based on 105 skulls in the National Museum of Canada, a large number of which are accompanied by skins.

Euarctos americanus americanus (Pallas, 1780). Eastern Black Bear.

Type locality.—Eastern North America. Range: Wooded district of North America from Labrador and Nova Scotia west to foothills of Rocky Mountains and to southern parts of Northwest Territories.

The Eastern black bear is fairly large, but smaller than some of the western forms. Female bears are usually somewhat smaller than males of the same race and age, and their teeth are slighly smaller. The bony processes of the skull, particularly the sagittal ridge, are heavier and better developed in adult males, but both sexes usually show the typical characters to some degree. In *E. a. americanus* the cranium is rather high and rounded, sloping uniformly anteriorly down frontals and nasals and posteriorly from crown to supraoccipitals; teeth rather large, with larger molars and molariform tooth-row longer than in *E. a. cinnamomum.* The

Canada, as we have only one record, a male cub of bright cinnamon colour trapped by Eugene Sarazin, September 8, 1935, seven miles North of Montebello, Labelle county, Quebec.

Skull measurements.—Typical adult male, Moose Creek, Stormont County, eastern Ontario: Condylobasal length, 266.5; basilar length of Hensel, 254; palatal length, 143; postpalatal length, 113; zygomatic breadth, 178; width across postorbital processes, 91; length of nasals, 70; alveolar length of upper molariform tooth-row, 56; length of last (second) upper molar, 27.2; alveolar length of lower molariform tooth-row, 66.2; length of last (third) lower molar, 17 mm

Specimens examined.—18. ***Ontario:*** 8, from eastern Ontario west to Nipissing, Thunder Bay, and Rainy River District. ***Quebec:*** 7, from Anticosti Island to western Quebec, Pontiac county. ***Manitoba:*** 2, Riding Mountain. ***Alberta:*** 1, Wood Buffalo Park, (the latter referred to *americanus*, but showing an approach to *cinnamomum* of Rocky Mountain region in having somewhat smaller molars than eastern Ontario specimens, and with nasals broader and more truncated posteriorly than in *americanus*, with posterior ends of nasals in line with the posterior projections of premaxillae).

Ursus americanus cinnamomum (Audubon and Bachman, 1854). Rocky Mountain Black Bear.

Type locality.—Northern Rocky Mountains. Range: In Rocky Mountain region of western Canada in western Alberta and eastern British Columbia from the International Boundary; northern limits undetermined.

A rather large black bear, showing the brown or "cinnamon" colour phase more commonly than in the eastern bears. Skull about the same height as in typical *americanus*, but heavier and more massive, with cranium broader, rostrum (muzzle) shorter, mastoid processes larger, distance between postorbital processes greater, postpalatal shelf generally longer and broader, and with zygomatic breadth greater and more outward curving and with arms of greater vertical breadth. Differs from *altifrontalis* in being heavier and having the frontal shield much less strongly dished.

Park, Alberta; condylobasal length, 277; basilar length of Hensel, 261; palatal length, 138; postpalatal length, 125.5; zygomatic breadth, 195; width across postorbital processes, 111.5; length of nasals, 69; alvaolar length of upper molariform tooth-row, 54.6; length of last (second) upper molar, 25; alveolar length of lower molariform tooth-row, 61; length of last (third) upper molar, 14.5.

Specimens examined.—35.

Alberta:

Banff National Park, 3; Jasper National Park, 7; Waterton Lakes National Park, 13.

British Columbia:

Glacier National Park, 2; Morrissey, 1: Yoho National Park, 9.

Euarctos americanus altifrontalis (Elliot, 1903). Olympic Black Bear.

Type locality.—Lake Crescent, Clallam County, Washington. Range: From northwestern California, western Oregon, western Washington, and along the southwestern coast of British Columbia north to Bella Coola region, and the interior east to Yahk and Barkerville region.

A medium-sized black bear, considerably smaller than *cinnamomum*, with frontal shield more dished and rising at a steeper angle, and posterior sagittal region sloping backward more steeply; zygomatic breadth less, and distance across postorbital processes less than in *cinnamomum*; mastoids lighter, postpalatal shelf narrower, and nasals longer and narrower; molariform tooth-rows longer and molariform teeth longer and heavier than in *cinnamomum*, large for size of skull, in that respect approaching *E. a. vancouveri*. Compared with *E. a. kermodei* the molariform tooth-rows and molar teeth are longer and heavier.

Skull measurements.—Typical male adult, Hagensborg, Bella Coola River, British Columbia: Condylobasal length, 260; basilar length of Hensel, 247; palatal length, 138; postpalatal length, 110; zygomatic breadth, 177; width across postorbital processes, 102; length of nasals, 76.5; alveolar length of upper molariform tooth-

molar, 17 mm.

Specimens examined.—7. ***British Columbia:*** Atnarko River, 1; Hagensborg, 1; Rivers Inlet, 2; Stuie, Bella Coola region, 2; Yahk, Meadow Creek, 1.

Euarctos americanus kermodei (Hornaday, 1905). KERMODE'S BLACK BEAR.

Type locality.—Gribble Island, British Columbia. Range: Coastal region of British Columbia from north of Nass River south to South Bentinck Arm, inhabiting most of the larger islands; limits of distribution in the interior undetermined.

A medium-sized bear which was first described from specimens with white or creamy coat and brown eyes (not albino). E. Raymond Hall (1928, a new race of black bear from Vancouver Island, British Columbia, with remarks on other northwest coast forms of *Euarctos*, Univ. California Publ. Zool., Vol. 30, No. 10, pp. 233, 234) compared skulls of this form with those of adjacent races and concludes that the white colour of some of the bears of the region is merely a colour phase of the same nature as the cinnamon phase of this and several other forms. The skull is smaller than in adjacent races and relatively narrow; frontal region low, highest part of skull rather farther back than in *altifrontalis;* teeth rather large for size of skull, but molar teeth smaller and molariform tooth-rows shorter than in *altifrontalis*, and sphenoidal shelf also shorter.

Skull measurements.—Male, adult, Hazelton, British Columbia; Condylobasal length, 265; Basilar length of Henzel, 248.5; palatal length, 135; postpalatal length, 115.5· zygomatic breadth, 175; width across postoribtal processes, 98; length of nasals, 78; alveolar length of upper molariform tooth-row, 54; length of last (second) molar, 27; alveolar length of lower molariform tooth-row, 62.5; length of last (third) lower molar, 16.5 mm.

Specimens examined.—7. ***British Columbia:*** Burke Channel, Kwatna Inlet, 1; Hazelton, Skeena River, 5; Nass River, headwaters, 1 (white phase).

Type locality.—Saint Elias Alps, near Yakutat Bay, Alaska Range: Mainland of southern Alaska, south at least to Taku River, intergrading with *Euactos a. perniger* to northwest of Yakutat Bay (Chitina River, Alaska); and probably with southwestern Yukon, Territory in region of Saint Elias Alps, northwestern British Columbia north of Lynn Canal.

This bear was originally described from a bluish-coloured bear from the glacier region, but Hall (*op. cit.*, p. 234) considers that this is only a colour phase of the black bear found in the same region. Nelson (1918, Wild Animals of North America, Nat. Geogr. Mag., Washington, p. 437) states that "cubs representing the glacier bear and the typical black bear have been found in the same litter". It appears to be a rather small bear, but somewhat larger than *Euarctos randi.*

Skull measurements.—Male, young adult, Chitina River, Alaska, and male adult from back of Lake Bennett, Yukon Territory, respectively: Condylobasal length, 253.5–; basilar length of Hensel, 235.5–; palatal length, 135, 136; postpalatal length, 101.5–,; zygomatic breath, 16.5-172; width across postorbital processes, 86.5-95; length of nasals, 67, 70; alveolar length of upper molariform tooth-row, 54, 52; length of last (second) upper molar, 26, 24; alveolar length of lower molariform tooth-row, 63, 61; length of last (third) lower molar, 16, 15.

Specimens examined.—3.

Alaska:

Hubrick's Camp, Chitina River, southwestern Alaska, 2.

Yukon Territory:

Lake Bennett, mountains back of, 10 miles north of British Columbia boundary, 1.

Euarctos vancouveri (Hall, 1928). VANCOUVER ISLAND BLACK BEAR.

Type locality.—King Solomon's Basin, Vancouver Island, British Columbia. Range: Restricted to Vancouver Island, where it is common and generally distributed.

The Vancouver Island black bear was described by Hall (*op. cit.*, pp. 231-236) under the name *Ursus americanus vancouveri*,

number of the other forms occurring in the northern States and Canada. In this paper he listed them all as subspecies of *Ursus (Euarctos) americanus*, including the forms which had been listed as species and subspecies of the subgenus *Euarctos* which was described by Gray (1865, Proc. Zool. Soc. London, 1864, p. 692; type, *Ursus americanus* Pallas) and raised to generic status by Miller (1924, List of North American Recent Mammals, 1923, Smithsonian Institution, U.S. Nat. Mus., Bull. 128, p. 90, March 18, 1924).

The diagnosis given by Gray (*op. cit.*, p. 692) is an adequate description of the group, namely:

> "*c.* Short-clawed American Bears. *Fur short, uniform. Front claws moderate, not much longer than the hind ones. Hind feet short. Upper tubercular moderately long, narrowed behind.* EUARCTOS.
>
> American Bear, Gray, Ann. Phil., 1825.
>
> "10. URSUS (EUARCTOS) AMERICANUS. B.M. . .
>
> "11. URSUS (EUARCTOS) CINNAMOMEUS? B.M." . . .

Gray's designation of this group as "Short-clawed American Bears" is perhaps more accurate than the commonly used name of "Black Bears", which is correct in regard to the great majority of the individuals of most of the geographical races, although a few individuals of most of the groups have brownish or even whitish coats. The *Euarctos* group is a compact assemblage of closely related forms, which are easily recognized, and any of them are readily separable from the much larger genus *Ursus* Linnaeus, as delimited by Merriam (1918, Review of the Grizzly and Big Brown Bears of North America, Genus Ursus, North Amer. No. 41, pp. 1-136, February 9, 1918), which runs up to about eighty-five North American forms divided nominally into a number of loosely classified "groups." Both for scientific accuracy and for convenience in reference to the different forms, the continued retention of *Euarctos* as a genus has much to recommend it.

The accepted custom for many years was to insist on definite proof of intergradation with other forms before considering a geographical race as a subspecies. The more modern practice, as stated by Hall (1944, Four new ermines from the islands of southeastern Alaska, Proc. Biol. Soc. Washington, vol. 57, pp. 25-43) is that "The degree of morphological difference between any two kinds on adjoining islands is about the same as between a pair of related subspecies on the adjacent mainland. For this reason the insular forms are regarded as subspecies rather than distinct species although geographical intergradation is obviously impossible." This hypothesis seems entirely reasonable where islands are close to the mainland or presumably closely connected in fairly recent geological periods, or where intergradation appears possible by recent adventitious colonization from the mainland.

The two insular forms of black bear on the Pacific coast, *Euarctos vancouveri* of Vancouver Island and *Euarctos carlottæ* of the Queen Charlotte Islands, are separated from the mainland by broad, deep channels and swift currents, and have presumably been isolated from contact with the mainland forms for a long time, a condition which is well demonstrated by the limited number of species of land mammals on both of the above groups of islands, and the total absence of many species which are abundant on the mainland coast opposite the islands. The black bears of these two insular groups show marked difference in size from the forms on the nearest mainland, and other morphological differences which are obviously greater than the differences between the nearest mainland forms which are treated as subspecies of *Euarctos americanus*, and the writer considers it justifiable to consider them as distinct species of the genus *Euarctos*.

The Vancouver Island black bear does not need detailed comparison with other forms on the mainland. It is considerably larger than *E. a. altifrontalis* of the mainland east of Vancouver Island. The larger skulls of *vancouveri* are approached in length by some specimens of *E. a. americanus*, *E. a. cinnamomum* and *E. hunteri*, but *vancouveri* has cranium and mandibles more heavy and massive than in any other form except *E. carlottæ* of the Queen Charlotte Islands. The zygomatic arches are higher vertically and are more broadly spreading than in any other form of *Euarctos*: rostrum short and broad· suboccipital broad· mastoid processes short and appressed; teeth medium-sized. We have no records of a cinnamon phase in this species.

length, 275, 268; basilar length of Hensel, 261, 259; palatal length, 144, 141; postpalatal length, 120, 115, zygomatic breadth, 197, 194.5; width across postorbital processes, 118, 101; length of nasals, 86.5, 78.5; alveolar length of upper molariform tooth-row, 57, 58; length of last (third) upper molar, 28.5, 28.5; alveolar length of lower molariform tooth-row, 65, 64; length of last (third) lower molar, 15, 15.

Specimens examined.—5.

British Columbia. Comox, 4; Cowichan Lake, 1. (Additional records of 8 specimens are given by Hall (*op. cit.*, p. 231); from Vancouver Island: Errington, 1; Englishman's River, 1; King Solomon's Basin, 2; Mount Douglas, 2; Nootka Sound, 1; Sproat Lake, 1).

Euarctos carlottae (Osgood, 1901). Queen Charlotte Black Bear.

Type locality.—Massett, Graham Island, Queen Charlotte Islands, British Columbia. Range: Known only from Graham and Moresby Islands of the Queen Charlotte Islands.

The Queen Charlotte bear is a large bear about the same size as the Vancouver Island bear, and resembling the latter in general appearance, and in having a heavy and massive skull, but with somewhat larger molar teeth. Osgood (1901, Nat. Hist. Queen Charlotte Islands, North Amer. Fauna, No. 21, pp. 30-32, pl. 4) describes this species from seven perfect skulls from Massett, stating that these bears are said to be glossy black at all times, the cinnamon phase being absolutely unknown on the islands.

Compared with *vancouveri* the rostrum is broader, with nasals about the same length but projecting slightly farther forward over anterior nares; anterior nares slightly longer and narrower proportionately; mastoid processes considerably longer and projecting outward at a greater angle, not appressed; zygomatic arches slightly more upcurved, and lighter posteriorly; molariform tooth-rows slightly longer, and molar teeth somewhat larger and heavier, particularly the last (posterior) molars in both upper and lower jaws; palate similar to *vancouveri*, deeply trenched and highly arched.

unknown sex, respectively, both from Massett, Graham Island. Condylobasal length, 261; basilar length of Hensel, 247.5; palatal length, 152, 140; postpalatal length, 107.5; zygomatic breadth, 196, 146; width across postorbital processes, 116, 88; length of nasals, 75, 69; alveolar length of upper molariform tooth-row, 58, 61; length of last (second) upper molar, 29, 30; alveolar length of lower molariform tooth-row, 64, 68; length of last (third) lower molar, 18, 16.

Specimens examined.—5.

British Columbia : Graham Island (exact locality not given), 2; Massett, Graham Island, 3.

Euarctos hunteri, sp. nov. Big Northwestern Black Bear.

Type locality.—South Nahanni River, Nahanni Mountains, Mackenzie District, Northwest Territories, Canada. Detailed discussion of this form given on pages 22, 23, 24 and 25.

Euarcto randi, sp. nov. Little Yukon Black Bear.

Type locality.—Sheldon Mountain, Canol Road, mile 222, Yukon Territory, Canada. Detailed discussion of this form given on pages 19, 20, 21 and 22.

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